

the tissues so that a goodly supply of blood may get to the injured cells. When physiological drainage is established, vaccines may then be used to stimulate the normal forces to do their utmost to destroy invading organisms.

If the patient is run down, if his gastrointestinal tract is sending a stream of toxic substances into his system, one can not expect vaccines to do the most good. Nor can one expect a patient who is so weak that normal stimuli fail to bring forth the least response to respond actively to vaccine therapy. The best results are always obtained in those cases who themselves normally react to invading parasites. The ideal reaction is in the person who is perfectly normal; hence the good result from the use of vaccines as a prophylactic measure. The reaction in acute and chronic cases is practically the same except in chronic cases the patient has still the power to a limited extent of keeping the bacteria in abeyance though not enough power to destroy them entirely. Vaccines stimulate the cells to increase this power.

The same stimulation which enables a person to become prophylactically protected by specific vaccines is at work whether the person is well or diseased. While it may be true that the ill person has not such a great power of response to vaccine therapy, it certainly can not be true that he loses this power the moment he is attacked by invading micro organisms. If prophylactic vaccination is specific, certainly curative vaccination has a specific function which on account of the length of time essential to produce its maximal results is best seen in chronic cases. If the healthy body can produce specific anti-bodies as a result of prophylactic vaccination, the sick body must certainly retain some of this anti-body producing power. The intensity of the reaction, all other things being equal, depends upon the functioning power of the body cells. This power is at its height in the healthy body and may diminish as the cells are overcome by disease. The best time to use vaccine therapy, therefore, is not as a last resort, but early in the disease. If used early, the response will be more intense and the number of failures will be far less numerous.

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RECTAL HEMORRHAGE.*

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When blood appears from the mouth or urethra, whether it be in mere traces, free, clotted or mixed with sputum, vomitus or urine, it is generally a matter of much concern to the average individual. He usually consults a physician at the earliest moment, and the probabilities are that every modern scientific method will be employed to discover the source of the bleeding.

But if there should be even quite a profuse discharge of blood from the rectum, that same individual will most likely procrastinate, and, satisfying himself with a selfmade diagnosis of, "just a little attack of piles," will put off seeking medical at-

tention in the hope that the bleeding will soon pass away either of its own accord, or after the use of some proprietary remedy. Occasionally there is someone, perhaps more easily alarmed or a bit more cautious about his health than his fellows, who will come for advice immediately after the first appearance of rectal bleeding, but the great majority are apt to wait for some time before doing so. When they finally do seek advice, too often their self-made diagnosis is accepted without question or rectal examination, and treatment is given for the supposed "piles." That this is not an exaggerated statement, those will testify who see many cases of rectal cancer which are left undiagnosed until too late.

The history records in the department of rectal surgery of the San Francisco Polyclinic, and in my private practice, show that the complaint for which most patients come for treatment is "piles." No matter what is really wrong, every symptom about the ano-rectal region is attributed to this. Among the symptoms mostly complained of, "bleeding from the rectum" holds first place. In most cases it has been present, on and off, for more than one year, and usually no effort has been made to find the cause.

On examination we find that in most instances the hemorrhages do arise from internal hemorrhoids, but sometimes they do not. In fact, I believe the proportion of the latter is far greater than the general profession seems to be aware of, for numerous instances have come under observation where there has appeared to be a lack of knowledge that rectal bleeding might arise from other causes than hemorrhoids. As the result of neglecting to make a rectal examination, at times a cancer has remained undiagnosed, whereas had it been done the growth might have been found and removed in the early stages before it has become inoperable. It is this which offers the excuse for the presentation of this paper, wherein attention will be directed to the significance of blood discharged from the rectum, its possible points of origin, and the necessity for and value of thorough examination of the anus, rectum and sigmoid in every case where rectal hemorrhage occurs.

A patient's estimate of the amount of blood which he loses is not always to be taken at full valuation. Not that it is purposely exaggerated or underestimated, but because there are few people who are capable of stating it accurately. As a rule they claim that much more is being lost than is really the case. Seeing a reddish discoloration of all the water in the toilet bowl, is what often gives them the false impression that a large quantity of blood is being discharged. Yet, on the other hand, I have learned by experience that every patient's statement is worthy of full consideration, as there have been times when I doubted what seemed to be an exaggerated history, and found, much to my surprise, that the rectum and sigmoid was full of dark liquid and clotted blood.

Some patients will declare that they have never seen any bleeding, or have had only a slight discharge now and then. Even such a history will bear further investigation, for there are individuals

* Read before the San Francisco County Medical Society, August 7, 1917.

who are quite careless about themselves, never taking the least pains to learn what is wrong even if they do have untoward rectal symptoms. Again, it may be that the light in the toilet was so dim as to make it difficult to see anything even if it was there.

Digressing here for a moment, I would make the suggestion that the diagnostician and general practitioner should invariably ask his patient if there is or ever has been any discharge of blood from the rectum, just as he always questions regarding the spitting, coughing or vomiting of blood from the mouth. If this becomes part of a routine questionnaire, it might sometimes furnish the clue to the diagnosis of a seemingly obscure condition. In a paper read before the American Proctologic Society, in 1916, on "The Consideration of Anorectal and Colonic Diseases in Life Insurance Examinations," I stated that, if more stress were laid on this question by life insurance examiners, their companies would many times be saved from accepting undesirable risks. The reasons therefor will appear further on in this paper.

Replies to the question whether the bleeding comes before, during or after stool, or without any relation to it, are likewise often misleading, simply because the patient may not be of an observant nature. From some patients you can readily learn if the blood comes away free, or mixed with mucus, pus or feces; or if it is bright red, dark, or tarry in appearance. From others you can gain but meager information.

The color of the bloody discharge depends of course upon where it originates, whether high or low in the bowel, and upon how long it has remained there. When bright red it comes, as a rule, from a lesion in the anus or rectum. Yet in a massive hemorrhage from high in the intestines it may also be this color, should it be discharged soon after leaving the bleeding vessel. This does not happen frequently. In all the large hemorrhages I have observed, where the proctoscope has shown that the bleeding must have arisen at some point above the lower third of the sigmoid, the blood was fluid, quite dark in color, and containing large clots, or was tarry in appearance, with a characteristic foul odor.

Though the lesions causing tarry stools come more within the province of the internist and the abdominal surgeon, yet for diagnostic reasons they must always be taken into consideration by the enteroproctologist, and so on this account will be mentioned briefly here.

Bleeding from gastric and duodenal ulcers and cancers is the usual cause of passages having a tarry appearance. They may also follow severe hemorrhages from the nares, lungs, ruptured varicose oesophageal veins, or typhoid ulcerations. Portal obstruction from any cause, but particularly so from cirrhosis or cancer of the liver, acute yellow hepatic atrophy, purpura hemorrhagica, hemophilia, leucaemia, aneurism, thrombosis of the superior mesenteric artery, and scurvy also may be causes. The rupture of an aneurism of the abdominal aorta into the bowel would naturally give rise to a massive hemorrhage, but the diagnosis

of the causation, if the case were seen for the first time, would be made on the post-mortem table.

In passing from the subject of tarry stools it may be said that they are not seen in carcinoma of the colon, as profuse hemorrhage seldom arises from these growths.

When there is profuse bleeding into and from the rectal cavity, it is generally from an ulcerating cancer of the sigmoid or the rectum. The discharge is then fluid, dark colored, contains clots, and is mixed with tissue debris and feculent material.

I shall pass over rapidly an enumeration of other lesions and diseases in which there is bleeding from the rectum, in varying amounts and color, either free or mixed with the stools, but with which again the internist is mostly concerned,—such as yellow fever, septicemia, pyemia, pernicious malarial fever, dengue, typhoid fever, jaundice, abdominal injuries, intestinal hemorrhages not due to tuberculous ulceration, such as may appear as an intercurrent event in pulmonary phthisis, sudden diarrhoeal attacks with bloody mucus which are sometimes present in exophthalmic goiter, the streaks of blood in the passages arising from the ingestion of arsenic and phosphorous, cancer or ulceration of the large and small intestine, intestinal parasites, crises of bloody diarrhea accompanied by paroxysmal pain which form one of the most important symptoms betraying the presence of arteriosclerosis of the intestinal vessels,—and confine myself only to the consideration of such causes of macroscopic bleeding as are localized in the anus, rectum and lower sigmoid, excluding therefrom hemorrhage during or following operation.

We shall begin by taking up rectal bleeding in children. This is a subject which has been given very little attention, as not many of these cases are seen. But since hemorrhoids are rather infrequent in children,—though they have been reported in those as young as three years of age, and even in infants, (in whom they are congenital),—and as hemorrhoids in children rarely bleed, a snap diagnosis of any rectal bleeding being due to "piles," is very apt to lead one into difficulties.

The most common source of rectal bleeding in those under ten years or so of age is the solitary polypoid adenoma, which is usually found on the posterior wall of the lower end of the rectum. It may be about the size of a cherry, and has frequently quite a long pedicle, which allows it to be brought out of the anus by the finger. It is often protruded during defecation and then appears as a small rounded reddish growth, at times with the surface bleeding, the result of abrasion by hardened feces.

Multiple polypi may exist. The bleeding then may be quite profuse, and the results most serious. Their presence can be diagnosed only by proctosigmoidoscopic examination. This can be done as easily in a child as in an adult.

Fissures of the anus are not uncommon in children. In infants, and in older children, they are often the consequence of the nurse ignoring the true direction of the anal canal and inserting a thermometer or an irrigator nozzle wrongly and

too forcibly into the rectum, causing a tear in the anal mucosa, which, becoming infected, develops into a true fissure. A drop or two of blood from this may be passed with every bowel movement.

Multiple fissures about the anus, the concomitant of early hereditary syphilis, bleed very easily during and between bowel movements. When there is an ulcer in the rectum, there may be bleeding with every stool. It may be only small in amount or so large as to cause general symptoms.

Traces of blood in the stools, and sometimes even quite profuse hemorrhages are present with the catarrhal proctitis and colitis of children. On examination the bowel mucosa is seen to be reddened and swollen, and to have a tendency to bleed quite readily.

There is one form of colitis,—that due to infection by the ameba *hystolitica*,—which is relatively rare in children. Yet it is to be remembered that it does occur, and that, as Henry Dwight Chapin says, it is perhaps more common than we think, the probabilities being that we have not looked for it with sufficient diligence. Butterworth has reported a case in an infant of thirteen months. There are frequent stools containing blood. It is said that the hemorrhages have even resulted in death.

In intussusception of the bowel, blood is seen mixed with the diarrhoeal stools. Carmichael states that when blood and mucus are found in the rectum of an infant under one year, it never fails to indicate the presence of an intussusception.

Foreign bodies and prolapse also may cause rectal bleeding in little ones. In prolapse there is rarely bleeding unless the mucosa is traumatised. While malignancy is an exceedingly rare condition in children, still it does occur, and must be thought of when endeavoring to locate the source of a rectal hemorrhage.

Turning now to those local conditions in adults which give rise to the symptom now under discussion we will commence with the one which is most frequently the cause,—internal hemorrhoids.

Bleeding is one of the chief symptoms of internal hemorrhoids. It is present in more than 75% of all the cases seen. In the majority of these but a few drops of blood are passed while the patient strains at stool. In the others, the piles become prolapsed, and when there is heavy straining, the blood is started in a fine continuous stream, spraying the sides of the toilet bowl and reddening the water at the bottom.

Numerous instances have come under my observation where the hemorrhoids constantly protruded while the sufferer was up and about, and the bleeding was so profuse that it saturated the undergarments and trickled down the legs.

It is not to be forgotten that hepatic cirrhosis may explain the occasional copious bleeding in some cases of piles, the discharge acting as a safety valve for the surcharged portal circulation.

Distended hemorrhoidal veins located high up in the rectum at times give rise to frequent and alarming hemorrhages in individuals who are otherwise healthy. They are not infrequently causes of occult hemorrhages, resulting in a severe anemia,

often leading to a false diagnosis of pernicious anemia, especially when no procto-sigmoidoscopic examination had been made.

On several occasions, the first time I saw the patient, I have mentally labeled the case as one of cancer, on account of the seemingly characteristic color of the skin, and the general appearance. A remarkable change for the better took place in looks and physical condition after the removal of the offending bleeding hemorrhoids.

While the subject of treatment was not to be touched upon in this paper, it may not be amiss at this point to say that an operation for the removal of bleeding hemorrhoids is always advisable even when the hemoglobin is very low from the repeated hemorrhages. In the majority of cases it can be done under local anesthesia without pain or shock to the patient. In certain selected cases the injection method of Terrell can be used. This will promptly and effectually stop the bleeding, and often will effect a cure.

There is rarely any bleeding from thrombotic external hemorrhoids, but I have seen a few cases where the overlying skin has ruptured and the vein kept pouring out its content in a small but steady stream, the contraction of the lumen of the vessel being prevented by the presence of the thrombus.

An ordinary simple fissure of the anus bleeds little, if any. A trace, or a drop or two, may be present following the passage of a hard stool. The latter may be lightly streaked with the sanguineous fluid. However, should the lower end of the fissure be without the grasp of the sphincter then there may be sufficient bleeding to trickle down the limbs.

An ulcer of the rectal mucosa is always accompanied by more or less bleeding. When the ulceration is caused by rapidly spreading syphilitic, tuberculous or malignant disease, the hemorrhage is often quite profuse and even alarming. One of the most severe hemorrhages which has ever come under my observation was caused by the ulceration of internal hemorrhoids following their injection with carbolic acid, a few days before, by one who had long experience in that method of treatment.

Prolapse of the rectum, unless of an aggravated type, or complicated with hemorrhoids, does not bleed except when the mucosa is irritated by rubbing when outside of the anus, or by being frequently replaced.

Hemorrhage from a pedunculated rectal adenoma is not infrequently met with when examining a patient presumed to be suffering from bleeding internal hemorrhoids. The blood is generally mixed with mucus, but it may be quite free when the growth becomes twisted on its pedicle, protrudes from the anus, or has its surface eroded.

With multiple adenomata of the rectum and colon, profuse hemorrhages and diarrhoeal movements, consisting of blood mixed with feces, are predominant symptoms. An accurate diagnosis of this condition can be made only by a sigmoidoscopic examination.

Similar symptoms are present in hemorrhagic

colitis. In this disease the quantity of blood lost in twenty-four hours may be as much as 500 c. c. Seen through the protoscope, the mucosa of the bowel presents a curious spongy appearance, with blood oozing from minute points on the walls, gathering, as one observer puts it, "like sweat on the brow."

There is more or less bleeding in severe proctitis and the various forms of colitis. The blood is generally mixed with mucus or feces, or with both.

Within the past month I saw a woman who had been under treatment for a mucous colitis. The main symptom was the passage of mucus, stained at times with blood. I found what I thought to be an adenoma about the size of a large cherry, situated on the second valve of Houston. This was removed. The report of the pathologist, Dr. Wm. Ophuls, was, "Carcinoma."

In my own experience there is the most bleeding in proctitis when there are erosions in the mucosa overlying the rectal valves. This has been conspicuously so in several cases of amebiasis which I have seen. One of these cases was of particular interest. The patient was brought to me, in consultation, for severe rectal hemorrhages which were presumed to have resulted from traumatism due to the use of a "cascade" syringe. Proctoscopic examination revealed numerous typical amebic ulcerations.

Speaking of traumatism, this often plays quite a part in the causation of rectal bleeding. Leaving aside that bleeding caused by gunshot, stabbing, impaling, or any other form of external violence, we find that it often arises from small lacerations of the anus, resembling severe fissures. These bleed readily when the buttocks are separated. They may result from pederastic practices, injuries due to improperly directed and roughly inserted syringe tips or examining instruments, or from the passage of large hard fecal masses, long retained and then forcibly expelled.

The possibility that a foreign body may be the reason for the bleeding should always be thought of, especially so when it occurs in children and feeble-minded persons. Fishbones, pins, and tooth-picks, are not uncommonly met with. Not long ago I found a large chicken vertebra obstructing the anal outlet of a woman whose symptoms before examination led me to think she had a fissure. Mummery has reported the case of a laboring man residing in a country where dysentery was indigenous. He was taken with acute diarrhoea, and passed much pus and blood by the bowel. After being treated by a doctor without results, for some four or five weeks, a rectal examination was decided upon, and revealed a broken egg cup impacted in the rectum.

Bleeding occurs in stricture of the rectum only when there is a complicating ulceration. During dilatation treatment there is more or less hemorrhage, but the etiology is then evident.

A rectal or anal fistula rarely bleeds unless it is probed. If the manipulation is unduly rough, considerably clotted blood will afterwards be found in the rectal cavity or anal canal, as the case may be.

Lynch tells us that periodical attacks of hemorrhage occur in chronic intussusception of the sigmoid. Bonney, Peters and Bullock report the same symptom in tuberculosis, without symptoms of tuberculosis of the intestine.

A most interesting, though rather rare, cause of rectal bleeding is that of vicarious menstruation. Personally I have never met with an instance of this, though cases have been reported by trustworthy clinicians. Irwin saw a woman who vomited blood and had a profuse rectal hemorrhage. There was no disease of the rectum to account for it. The bleeding occurred regularly at the time menstruation should have taken place, one to three pints of blood being discharged each time. Quintree mentions the case of a male, with lobulated well-developed mammae, who had an anal menstrual discharge which had persisted for eleven years. The blood escaped from the anus for two days, recurring every twenty-eight days. Numerous others have written of having seen individuals who had a periodic menstrual flow from the hemorrhoidal vessels.

I have purposely left for the last the mention of the most important of all the lesions giving rise to bleeding from the rectum; one which, by merely staining a mucous discharge, betrays early its insidious and deadly presence; one which, alas, is too frequently overlooked, and even unsought for; and one which it is most essential for the diagnostician to eliminate by a thorough recto-sigmoidoscopic examination,—I refer to cancer.

In this disease bleeding occurs earliest when the growth is near the anal orifice. It is then seldom very copious, and more apt to come from co-existent internal hemorrhoids. A short time ago I saw a man who had had his hemorrhoids removed about a month ago. No examination of the parts above the hemorrhoidal area had been made. All his symptoms grew worse after the operation. My examination disclosed an inoperable cancer encircling the rectal cavity just above the site of recent operation. Neglecting to make a digital examination had led to the error.

Cancers of the rectum, unlike those in the mobile sigmoid and colon, being in a fixed organ readily become traumatised by passing hard fecal masses, and so become ulcerated early, with consequent bleeding. The bleeding is slight at first but, as the disease progresses, it becomes more profuse, and death has already occurred from exsanguination when a large blood vessel has been invaded.

Having discussed the many conditions which may give rise to rectal hemorrhage, we will conclude this paper by again suggesting that which the writer has repeatedly advised in former papers read before this and other medical societies, namely, always make a complete ano-rectal examination in every case presenting any symptoms referable to those parts. Above all else, make a digital examination. Rule out the possibility of cancer whenever there is rectal bleeding. Even when you feel reasonably assured that the cause for a sanguineous discharge lies in internal piles never operate until you absolutely know that cancer, ulceration or

benign growth is not existant above the hemorrhoidal zone.

Always use the greatest care in making a rectocolonic examination after a recent hemorrhage. Even though skilled in the use of the sigmoidoscope, one sometimes finds it quite difficult to discover the exact spot from where the bleeding arises, and repeated examinations may be required before it can be located.

THE MANAGEMENT OF SURGICAL RISK. A REVIEW OF 100 KIDNEY AND PROSTATE OPERATIONS, AND 50 CASES OF ENLARGED PROSTATE NOT OPERATED UPON.*

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Pre-operative, operative and post-operative periods of management of certain surgical cases are often so interdependent that careless attention to the details of any one may counteract an absolutely perfect execution of the others. Mismanagement brings disaster most frequently in cases with marked clinical abnormalities. The commonest abnormality in old men with enlarged prostates is renal disturbance, and the problem is similar to that which occasionally arises in renal surgery. The risks encountered in both will receive emphasis in a joint consideration. The operative, clinical and therapeutic forces which control surgical risk may be outlined as follows:

- I—Operative Conditions, depending on
 - A, Region operated and Type of Operation.
 - B, Surgical Technic and Team Work. (Skill of performance on the part of the surgeon, surgical assistants and nurses.)
 - C, Anaesthesia
 - Choice
 - Skill of Administration
 - Duration.
 - D, Complications
 - Operative
 - Post-operative.
- II—Clinical Conditions, depending on
 - E, Age of the patient.
 - F, Physical Abnormalities
 - Cardiac
 - Renal
 - Cardio-renal
 - Diabetes
 - Anemia
 - Infection.
 - G, Physical Reserve or Stamina.
- III—Therapeutic Conditions, depending on
 - H, Methods and Period of Preparation,
 - Preliminary
 - Pre-operative.
 - I, Methods of Post-operative Treatment.

The present consideration will be confined to an analysis of therapeutic conditions.

One hundred and four surgical cases and 50 contemporary prostatitis who have not been operated (in the two years 1915-1916) furnish the basis for the following review of methods of man-

agement. The prostate was enucleated by the perineal route in 49 and suprapubically in two cases. There were 24 nephrectomies, 8 nephrotomies, 3 ureterotomies, 2 pyeloplasties, 3 lumbar drainage cases, 5 pyelotomies, 2 ureterectomies and 6 nephropexies. There have been two operative deaths in the series, a mortality of 1.9%, both of which followed prostatectomy, giving an operative mortality of 4% (51 cases) for the prostate and no mortality for the kidney cases. Five of the prostatitis (2 cancer) and one case of advanced bilateral renal tuberculosis (general phthisis) have come to death since operation, a final mortality, in two and one-half years, of 14% for the prostatitis and 0.1% for the kidneys. Nine of the unoperated prostatitis (1 cancer) have died in the same period of time. An unoperative mortality of 18% deserves an honest scrutiny of these two probable factors: delay of the patient in seeking treatment until the condition has become practically hopeless, and the particular method of preparation.

The one complication in both prostate and kidney cases which deserves serious consideration is infection. In the prostate series urinary infection was practically universal. In 29 of the prostatectomy cases the pyuria was severe and present in a milder form in 12 others. In the milder forms infection is usually limited to the bladder and urethra, but in the severe types ureteritis, pyelitis, pyelonephritis or pyonephrosis is probable. This was proven by ureteral catheterization before operation in four cases and on the post-mortem table in all of six of the nine unoperated fatalities. These kidney and bladder infections may show exacerbation during the period of preparation or following operation, and lead to a speedy end; or may continue in a chronic form for months or years and eventually overcome local tissue resistance or reduce general resistance and initiate secondary infections elsewhere. The autopsies of two cases which lived almost a year after operation, showed cystitis, ureteritis, pyelonephritis, enteritis, colitis and broncho-pneumonia. In all but five cases of the unoperated series pus was present in the urine microscopically. Of the nine cases which have died each of the six necropsies showed a pronounced cystitis, ureteritis, and pyelonephritis. Three had a terminal broncho-pneumonia and one a lobar pneumonia. Endocardial vegetations were present in two and the myocardium showed inflammatory changes in three of the cases. In the other three fatalities the clinical evidence pointed to similar pathologic conditions, clearly to a cystitis, ureteritis and pyelonephritis.

The seriousness of urinary infection in kidney surgery is closely related to that of prostatitis. This was impressed by an early experience as House Resident. A pyelotomy for stone was highly successful from an operative standpoint, but there was a persistent post-operative temperature, leucocytosis and every clinical evidence of severe sepsis. The streptococcus was recovered from the urine and the wound drainage. Probing with a clamp failed to open any retention abscess. Examination after death on the fifth day showed an acute bilateral pyelonephritis with ureteritis

* Read before the Surgical Section of the San Francisco County Medical Society, August, 1917.